REMARKS

The present application was filed on February 28, 2002 with claims 1-21. Claims 1-21 remain pending. Claims 1, 20 and 21 are the independent claims.

Claims 1, 2, 4-18, 20, and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,389,019 (hereinafter "Fan") in view of U.S. Patent No. 6,374,405 (hereinafter "Willard").

Claims 1, 4, 14, 19 and 20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,889,763 (hereinafter "Boland") in view of Willard.

Claim 3 stands rejected under 35 U.S.C. §103(a) over Fan in view of Willard and further view of U.S. Patent No. 5,455,948 (hereinafter "Poole").

Claim 19 stands rejected under 35 U.S.C. §103(a) over Fan in view of Willard and in further view of Boland.

In this response, Applicants respectfully traverse the §103(a) rejections. Applicants respectfully request reconsideration of the present application in view of the remarks below.

A proper *prima facie* case of obviousness requires that the cited references when combined must "teach or suggest all the claim limitations," and that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references or to modify the reference teachings. See MPEP § 706.02(j).

Applicants submit that the Examiner has failed to establish a proper *prima facie* case of obviousness in either of the present §103(a) rejections of claim 1, in that neither Boland nor Fan, when combined with Willard, teach or suggest all the claim limitations, and in that no cogent motivation has been identified for combining the references or for modifying the reference teachings to reach the claimed invention. Further, even if it is assumed that a proper *prima facie* case has been established, there are particular teachings in one or more of the references which controvert the obviousness argument put forth by the Examiner.

The Examiner concedes that neither Fan nor Boland disclose the limitations found in claim 1 of a software-implemented interval computation element external to a hardware-implemented scheduler wherein adjustment of the transmission interval by the interval computation element allows the hardware-implemented scheduler to support at least one

scheduling algorithm not otherwise supported by the hardware-implemented scheduler. Instead, on pages 3 and 7 of the final Office Action, Examiner contends that these limitations are disclosed by Willard. More specifically, the Examiner relies on the teachings in column 6, line 50, to column 7, line 12 of Willard which provide in part as follows:

> In one embodiment, the scheduler is implemented in software. The software executes on a microprocessor or microcontroller in the broadcast station. In other embodiments, the scheduler may be implemented in software, firmware, hardware or a combination thereof. The software implementation is readily adaptable to alternate embodiments in which the delivery time and transmission interval are not explicitly provided to the scheduler. In these embodiments, the interval and start time may be calculated from information such as module size, transmission bit rate and number of modules being simultaneously transmitted. For example, the interval may be calculated by dividing the size of the module by the transmission bit rate and then multiplying it by the number of modules being transmitted at the same time.

It is respectfully submitted that the portion of Willard quoted above fails to teach or suggest the software-implemented interval computation element external to a hardware-implemented scheduler as set forth in claim 1. It does teach that a scheduler can be implemented in hardware, but fails to teach or suggest that a hardware-implemented scheduler can be advantageously combined with a software-implemented interval computation element external to the hardware-implemented scheduler, so as to implement time slot table based scheduling algorithms not otherwise supported by the hardware-implemented scheduler. To the contrary, the above portion of Willard appears to teach away from the claim limitation at issue by teaching, for example, a software-implemented scheduler that itself computes a transmission interval.

Applicants alone have determined that use of a software-implemented interval computation element in conjunction with a hardware-implemented scheduler based on time slot tables can provide significant advantages over conventional time slot table based scheduler implementations. For example, software control of the interval for transmission of data blocks

associated with particular locations in a time slot table can allow the hardware-implemented scheduler to support multiple scheduling algorithms not otherwise supported by the hardware-based scheduler alone. See the specification at, for example, page 11, line 21, to page 12, line 3, and page 12, lines 11-18. Also, the interval computation may be performed after the transmission or scheduling for transmission of a given data block, and thus does not delay the transmission of that data block. See the specification at, for example, page 12, lines 4-7. The proposed combinations of either Fan or Boland with Willard do not meet this particular limitation of claim 1, and fail to provide the associated advantages.

Applicants also note with regard to the rejection of claim 1 over Fan and Willard that Fan fails to teach or suggest the limitation of claim 1 relating to a particular location in the time slot table being assigned to one or more of the transmission elements as a function of both a current time and the transmission interval. The Examiner relies on column 8, line 61, to column 9, line 6, and column 9, lines 10-21 of Fan. Applicants respectfully submit that this relied-upon portion of Fan fails to mention any transmission interval, much less disclose the use of one in combination with a current time in assigning a location in the time slot table to one or more transmission elements. To the contrary, the scheduling mechanism disclosed in Fan simply maintains ready lists of eligible stream queues. See Fan at column 8, lines 54-56 and column 9, lines 16-24.

The §103(a) rejection of claim 1 over Boland and Willard is similarly deficient. Applicants note that page 7 of the final Office Action fails to identify any particular portion of Boland which is alleged to teach or suggest the limitation of claim 1 relating to a particular location in the time slot table being assigned to one or more of the transmission elements as a function of both a current time and the transmission interval. There is no teaching or suggestion in Boland regarding this particular limitation. To the contrary, the timetables 100 and 200 in Boland comprise entries which associate "some number of time slots with lists of transfer context designators or virtual connection designators." See Boland at column 2, lines 51-59.

It is thus believed that the collective teachings of Fan, Boland and Willard fail to meet the limitations of claim 1 and fail to provide the associated advantages in terms of enhanced scheduling algorithm flexibility for a given hardware-implemented scheduler.

With regard to motivation to combine either Fan or Boland with Willard, the Examiner provides the following statement in the final Office Action on pages 3 and 7-8:

> It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teachings from Willard of using the combination of software-implemented element and hardware-implemented scheduler to the time-base scheduler discloses [sic] by [Fan or Boland]. One of ordinary skill in the art would have been motivated to do this because using the combination of software and hardware system [sic] provides a flexible and scalable architecture, improves performance and provides extended lifespan of the device.

Applicants respectfully submit that the proffered statement fails to provide sufficient objective motivation for the combination. The Federal Circuit has stated that when patentability turns on the question of obviousness, the obviousness determination "must be based on objective evidence of record" and that "this precedent has been reinforced in myriad decisions, and cannot be dispensed with." In re Sang-Su Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002). Moreover, the Federal Circuit has stated that "conclusory statements" by an Examiner fail to adequately address the factual question of motivation, which is material to patentability and cannot be resolved "on subjective belief and unknown authority." Id. at 1343-1344. The statement listed above is believed to be a conclusory statement based on the type of "subjective belief and unknown authority" that the Federal Circuit has indicated provides insufficient support for an obviousness rejection. More specifically, the statement above is using the benefit obtained from a combination as a motivation for that combination, and is therefore based on impermissible hindsight.

As indicated previously, the particular separation of time slot table based scheduling circuitry into hardware-implemented scheduler and software-implemented interval computation element, and its attendant advantages, are not met by the proposed combinations. The general statements in Willard regarding possible implementation of a scheduler in "software, firmware, hardware or a combination thereof" fail to motivate modification of either Fan and Boland to

meet the particular limitations of claim 1 regarding advantageous implementation of a scheduler and an associated external interval computation element.

Additionally, Applicants respectfully submit that Willard is not analogous prior art in that is does not relate to time slot table based scheduling. See, e.g., MPEP § 2141.01(a); In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992) ("In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned."); In re Clay, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) ("A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem."). The mere presence of the word "scheduling" in the title of both the instant application and Willard is insufficient to establish that they are analogous art; see, e.g., Wang Lab. v. Toshiba Corp., 993 F.2d 858, 864 (Fed. Cir. 1993) (holding that "art is not in the same field of endeavor as the claimed subject matter merely because it relates to memories."). Willard has nothing to do with time slot table based scheduling, and those skilled in the art would therefore not have been motivated to look to Willard for teachings on how to implement time slot table based scheduling circuitry.

Independent claims 20 and 21 are believed allowable for reasons similar to those outlined above with regard to claim 1.

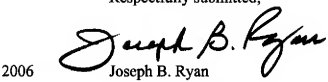
With regard to dependent claims 2-19, these claims are believed to be patentable for at least the reasons identified above in the context of claim 1, and the corresponding §103(a) rejections are therefore traversed. Furthermore, one or more of these claims define additional patentable subject matter in their own right.

For example, the recitation in dependent claim 3 of an interval computation element comprising a script processor is not disclosed by the prior art cited by the Examiner, namely the proposed combination of Fan, Willard and Poole. The Poole reference discloses the use of a script processor to "provide a way for the user interface component of an application program to operate independent of data and the source of the data." (Poole, column 3, lines 24-28). The script processor in Poole does not relate in any way to interval computation in the scheduling

context. There is thus no motivation to combine the teachings and the combined teachings still fail to suggest each and every element of the claim.

In view of the foregoing, claims 1-21 are believed to be in condition for allowance. As indicated previously, a Notice of Appeal is submitted concurrently herewith.

Respectfully submitted,



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